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OFFICIAL NEWSLETTER OF THE INTEGRATED PEST MANAGEMENT RESEARCH, DEVELOPMENT AND APPLICATIONS PROGRAM
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S.C. Technology Transfer/ Demonstration Project Initiated

A "no-holds-barred" attack on forest pests! That's what began last fall as pest management specialists from the Department of Forestry and Cooperative Extension Service of Clemson University, the South Carolina Forestry Commission, and the USDA Forest Service initiated a technology transfer/demonstration project entitled "Integrated Forest Pest Management in South Carolina." The project is partially supported by the Integrated Pest Management RD&A Program.

The ultimate goal of the project is to emphasize to forest managers and landowners the importance of incorporating pest management technology into their management plans and to provide for their use the most up-to-date techniques and information.

A great deal of pest management technology exists, but not all is readily available and usable. Therefore, one objective of the demonstration project was to identify and adapt existing technology to meet the needs of South Carolina landowners. A second objective was to develop user-friendly systems to give landowners, foresters, and pest managers ready access to the latest information on integrated pest management. The final objective, demonstrating how pest management strategies can be incorporated into forest management plans, would help tie everything together in meaningful ways.

The project focused on the southern pine beetle and littleleaf disease in the Piedmont and on fusiform rust and annosus root rot in the Coastal Plain. Information on the four problems is being assembled with specific emphasis on: a) Rating stand susceptibility to pest attack; b) survey methods for estimating and predicting timber mortality; c) silviculture practices

for preventing and reducing damage; d) direct control strategies; e) guidelines for making control decisions; and f) utilization of damaged timber.

Information on the identification, biology and control of weevils affecting pine reproduction and the pine tip moth will also be included in the technology transfer effort.

Activities during 1983 have primarily been geared to identifying and adapting existing technology for local needs on private, State, and Federal holdings. Several new stand hazard-rating systems for different pests have been evaluated and tested. Several computer program packages have been acquired and evaluated. Publications were reviewed, the need for new ones determined, and several bulletins prepared. Ultimately, all publications, pertinent computer programs, an integrated pest management decision key, a bibliographic search system, and video material will be available to forest and pest managers through an information center and the statewide computer network.

The most immediate, visible result of the first year of activities will undoubtedly be the portable sawmill set up by Dr. Frank Tainter of the Department of Forestry at Clemson and recently transferred to the South Carolina Forestry Commission. Demonstrations of its use were given in Chester, Fairfield, Newberry, and Union Counties, and the need for thinning and sanitation of pine stands to prevent and/or control SPB in susceptible stands was stressed. The information should enable landowners to utilize trees that might otherwise go to waste. Mike Remion coordinated the sawmill demonstrations for the Forestry Commission.

Anyone wanting additional information should contact the Department of Forestry, Clemson University (Don Ham 803/656-2478), the South Carolina Forestry Commission (Mike Remion 803/758-2261), or the USDA Forest Service (Bill Hoffard 704/258-2850, Ext. 625).

Disease Economic Models Available

The Forest Service's Southern Region, Forest Pest Management, has prepared three economic programs which will allow a land manager to assess the return on his investment in certain pest management practices. The programs are available on diskettes and are compatible with the Apple II/e microcomputer and Apple II look alikes.

The programs help answer: 1) Whether stumps should be treated with borax to prevent annosus root rot; 2) what should be done with a young stand infected with fusiform rust, and 3) whether fusiform rust-resistant seedlings should be favored over non-resistant seedlings.

A copy of the programs, plus an information sheet explaining the inputs, outputs, and assumptions behind the models, can be obtained by sending a blank diskette to: Mr. Clair Redmond, Economist, USDA Forest Service, 1720 Peachtree Street, NW, Room 706, Atlanta, Ga. 30367.

New Publication on Bark Beetle ID and Control Released

Terry Price, Georgia Forestry Commission, recently announced publication of "Bark Beetles of Southern Pines—Identification and Control." This booklet covers the five major southern pine bark beetles and emphasizes chemical control. The authors include Price, C. W. Berisford, U. E. Brady, V. R. Coleman, L. H. Kudon, G. D. Walker (University of Georgia), and John Taylor (USDA Forest Service).

For further information, contact Terry at the Georgia Forestry Commission, P.O. Box 819, Macon, Ga. 31298.

Entomology Seminar Observes Anniversary

St. Regis' Kurth Lodge near Lufkin, Texas, was the scene of the 10th anniversary celebration of the East Texas Forest Entomology Seminar, held on October 6–7, 1983. This quarterly program draws together forest entomologists and students from Arkansas, Louisiana, Mississippi and Texas to share information and generate cooperative exchange.

Keynote speaker for the October meeting was Ron Billings of the Texas Forest Service, whose topic was "Forest Pests in East Texas: Past Approaches; Future Challenges."

For the first time in the history of the seminar, speakers were asked to prepare formal presentations to highlight the state-of-the-art in major insect pest problems affecting forests in the four-State area and identify research needs and priorities. The papers will be published in the Technical Bulletin series of the Texas Agricultural Experiment Station. Current and former Program-supported investigators as well as members of the IPM Program Management team were well represented on the 2-day program. Topics presented included:

Research on Southern Pine Beetle:

Research/Application Programs—R. Thatcher (IPM Program)

Biology, Behavior & Seasonal Variation—T. Payne (Texas A. & M.)

Host/Insect Interactions—E. Nebeker (Miss. State)

Site/Stand Relationships—D. Kulhavy (Stephen F. Austin State Univ.)

Population Dynamics—B. Coulson (Texas A. & M.)

Technical Applications—G. Hertel and G. Mason (IPM Program)

Research on Other Forest Pests:

Seed Orchard Insects—S. Cameron (Texas Forest Service)

Town Ants—J. Moser (FS, Southern Station)

Tip Moths—F. Stephen (University of Arkansas)

Ips and Black Turpentine Beetles—T. Wagner (Texas A. & M.)

Weevils, Defoliators & Hardwood Insects—R. Goyer (Louisiana State University), J. Smith (FS, Southern Region)

Oversight and Guidance Committee Holds 1983 Meeting

Highlights of 1983 accomplishments and plans for 1984 were discussed at the Integrated Pest Management Program Oversight and Guidance Committee meeting in Atlanta, Georgia, recently. The committee was pleased with progress to date, supported the priorities and direction of the Program, and concurred with the activities proposed for the coming year. Members attending the Atlanta meeting included:

Dr. Arnett C. Mace, Jr. (Chairman), Director, School of Forest Resources and Conservation, University of Florida, representing National Association of Professional Forestry Schools and Colleges (NAPFSC), and Co-Chairman RPG-2.

Dr. Stanley J. Barras, Assistant Director, Southern Forest Experiment Station, New Orleans, La.—Forest Service—Research.

Dr. Benton H. Box, Dean, College of Forest and Recreation Resources, Clemson University, Clemson, S.C.—NAPFSC.

Thomas H. Ellis, Assistant Director, Southeastern Forest Experiment Station, Gainseville, Fla.—Forest Service—Research.

Eley Frazier, Consulting Forester, Albany, Ga.—Consulting Foresters.

Dr. John F. Hosner, Director, School of Forestry and Wildlife Resources, Virginia Polytechnic Institute & State University, Blacksburg, Va.—Southern State Agricultural Experiment Station Directors.

LeRoy Jones, Deputy Regional Forester, Southern Region, Atlanta, Ga.—Forest Service—State and Private Forestry.

Leonard A. Kilian, Jr., State Forester, South Carolina State Commission of Forestry, Columbia, S.C.—Southern State Foresters.

John Godbee, Union Camp Corporation, Rincon, Ga.—Southern Forest Industry Research Council (SFIRC).

Dr. Max W. McFadden, Research Forest Entomologist, Forest Insect and Disease Research Staff, Washington, D.C.—Forest Service—Research.

Dr. James E. Neal, Regional Extension Forester, Cooperative Extension Service, Athens, Ga.—Cooperative Extension Service.

J. Ed Sheppard, Mid-South Raw Materials Planning & Supply Manager, Weyerhaeuser Company, DeQueen, Ark.—SFIRC.

Dr. Laurence E. Lassen, Director, Southern Forest Experiment Station, New Orleans, La.—Forest Service—Research (Ex-officio member).

Dr. Eldon W. Ross, Director, Southeastern Forest Experiment Station, Asheville, N.C.—Forest Service—Research (Ex-officio member and Co-Chairman RPG-2).

Dr. Harvey V. Toko, Staff Director, Forest Pest Management, Southern Region, Atlanta, Ga.—Forest Service—State and Private Forestry.

Dr. Robert C. Thatcher, Program Manager, IPM Program, Southern Forest Experiment Station, Pineville, La.—Forest Service—Research.

Dr. Garland N. Mason, Research Coordinator, IPM Program, Southern Forest Experiment Station, Pineville, La.—Forest Service—Research.

Dr. Gerard D. Hertel, Applications Coordinator, IPM Program, Southern Forest Experiment Station, Pineville, La.—Forest Service—Research.

Faculty Award Goes to Berisford

Dr. C. Wayne Berisford, Professor of Entomology at the University of Georgia, has been honored as one of six recipients of the D. W. Brooks Award for Excellence. The awards are presented annually by the Uni-

versity's College of Agriculture to recognize outstanding achievement in teaching, research and extension. They include a plaque, a \$2,000 cash award, and a \$2,000 fund to be set aside for each recipient's program improvement efforts.

Dr. Berisford, cited for excellence in research, is the first winner in forest entomology. He has been a member of the faculty at the University since 1969, and he is nationally and internationally known for his research on pine tip moths and bark beetles.

Dr. Berisford earned his B.S. in forestry at West Virginia University and his master's and doctoral degrees in entomology at V.P.I. For 3 years, 1980-82, he was a Top Research Grant Recipient at the Georgia Agricultural Experiment Station. Other noteworthy achievements include: Outstanding Research Contributions, Southern Forest Insect Work Conference, 1969 and 1981; award for significant contributions to forestry, U.S. Forest Service, 1981; Creative Research Medal, University of Georgia Research Foundation, 1983; Member, U.S. Team reviewing forest pest management, People's Republic of China, 1981.

Research undertaken by Dr. Berisford has provided information aimed at reducing moth and beetle damage in commercial forests; predicting tip moth population levels to determine timing of control procedures; and explaining host selection by bark beetle parasites. Data from the latter study have become the basis for a large scale biological control program in Australia.

Writer/Editor Joins IPM Team

Susan Branham has joined the Integrated Pest Management RD&A Program as Writer-Editor, effective October 17, 1983. Ms. Branham was reassigned to the Southern Station from her position as Writer-Editor with WO Research. She has served in writing and editing positions with the Forest Service for 17 years, both in the Information and Education Division where she worked under the FS Chief Editor and, since 1974, with the Forest Resources Economics Staff in Research.

In her new position, Ms. Branham will work closely with the IPM team in developing agriculture handbooks, technical bulletins, a management guideline notebook, fact sheets, feature articles, newsletters, and reports for the Program.

Ms. Branham was born in Washington, D.C., and was educated in Maryland, receiving her B.A. in English from the University of Maryland, where she also did postgraduate work. She has a daughter, who has accompanied her to Alexandria, and two sons, one serving with the U.S. Navy's Sixth Fleet, and the other residing in Virginia.

Her previous experience included 6 years in various positions with ARS and ERS, USDA, and a year as a junior copywriter with the advertising agency of Dancer, Fitzgerald & Sample in New York City. Ms. Branham also writes free lance fiction and poetry and her work has been published recently in the Piedmont Literary Review and the Anthology of the American Poetry Association.

Technology Transfer Team Meets

Autumn colors of the southern Appalachians greeted members of the IPM-Decision Key Technology Transfer Team when they met in Dillard, Georgia, October 24–25. The team reviewed its accomplishments and made plans for the new fiscal year. Activity will continue with publications, demonstrations, visual aids, and an evaluation of implementation experiences. Team members include representatives from the Southeastern Forest Experiment Station (Roger P. Belanger), Southern Region, Forest Pest Management (Robert L. Anderson, H. Daniel Brown, William H. Hoffard, Paul A. Mistretta, Robert J. Uhler, Clair H. Redmond) and the Southern Forest Experiment Station (Gerard D. Hertel).

The Decision Key is an interactive, user-friendly, computer program which lists pest management options for several insect and disease problems. Additional information on the system can be obtained by writing the IPM-DK User Center, USDA Forest Service, Route 3, Box 1249A, Asheville, NC 28806.

Pine Bark Beetle Workshops Held in Georgia

The University of Georgia (Department of Entomology and Cooperative Extension Service), Georgia Forestry Commission, and USDA Forest Service (Southern Region) recently completed a series of nine bark beetle workshops that covered detection, identification, control, and pesticide safety. Chemical control equipment and application procedures were demonstrated in the field. These workshops attracted 531 foresters, landowners, extension agents, and pest-control operators. Southern pine beetle handbooks and fact sheets were distributed to the participants.

Terry Price, Kerry Thomas (Ga. For. Comm.), John Taylor (USDA Forest Service), Wayne Berisford (U. of Ga.), and V. Rodney Coleman and Ted Walker (Extension) conducted the training sessions.

SPB Trend Prediction Training Planned

A common question asked by managers and landowners concerned with controlling the southern pine beetle is "What's the SPB going to do . . . tomorrow, next year, by rotation?" Though this question cannot be answered with certainty, new tools are available that will allow pest management specialists to give better answers. This technology has been assembled in a uniform, easily understood format and will be offered to Federal and State pest management specialists at three training sessions scheduled for next spring.

IPM Program Coordinators Gerry Hertel and Garland Mason met October 25–26 with representatives of Forest Pest Management regional and field office staffs to identify the information and approach to be followed in each of the regional training sessions. The other planners included Ken Swain (Atlanta, Ga.), Bob Uhler (Doraville, Ga.), Bill Hoffard (Asheville, N.C.), and Mike Connor (Pineville, La.).

Regional workshops, locally arranged by FPM, are being scheduled for March–April in Pineville, Doraville, and Asheville. They will emphasize hands-on, state-of-the-art technology for predicting SPB population trends and impacts at the stand, county, State, and regional levels and for making better SPB control decisions.

New Technology Used in SPB Biological Evaluation

In late August, Southern Region entomologist Jim Smith and biological technician Huey Wallace completed a biological evaluation of southern pine beetle populations on the Mena, Caddo, Cold Springs, Poteau, Womble, and Oden Districts of the Ouachita National Forest in Arkansas (211,000 acres). One hundred ninety active spots, ranging from 3 to 268 trees, were detected from the air and 45 of these were ground checked as a part of the evaluation. What was so unique about this biological evaluation?

The Arkansas SPB spot growth model, developed through the ESPBRAP and IPM Programs, was used for the first time to predict additional tree mortality. The evaluation results will be used to determine the need for additional funds to deal with the SPB problem on the Ouachita National Forest. The Arkansas spot growth model was developed by Drs. Fred Stephen and Hamdy Taha at the University of Arkansas in Fayetteville. The minimum data needed to run the model include percentage of shortleaf and loblolly pines in the stand; mean d.b.h. of the stand; mean pine and hardwood basal areas; number of trees

currently infested; and number of trees from which beetles have already emerged. This computer simulation model is accessed through a fast, easy, and inexpensive user-friendly computing system. Contact Dr. Fred Stephen, Department of Entomology, A-319, University of Arkansas, Fayetteville, Ark. 72701 (501-575-3377) for additional information.

Line Intersect Method Proves Versatile

A Line Intersect Sampling (LIS) Method has been used by University of Georgia scientist Dr. Wayne Berisford to estimate the quantity of pine residue left after cutting operations. His sampling approach relates residue size and quantity to subsequent *Ips* engraver populations which develop in such material and threaten the residual stand. This work will permit Dr. Berisford to construct models that describe and predict total *Ips* brood production in cutover areas.

It recently came to our attention that Berisford's technique has been used for another program. Dr. J. Bruce Wallace, Professor of Entomology at the University of Georgia, a specialist in aquatic entomology, is using a modified version of the LIS technique to sample other material that serves as a home for aquatic insects. He has been able to estimate the density and surface area of woody material (like snags) in rivers and use the information to quantify populations of these invertebrates.

Additional information on the LIS technique can be obtained by writing to Dr. Berisford, Department of Entomology, University of Georgia, Athens, Ga. 30302.

RPAR on Lindane Completed

The U.S. Environmental Protection Agency has concluded the Rebuttable Presumption Against Registration (RPAR) on lindane. The major impact for users of lindane in forestry is that, for their purposes, lindane is now a restricted-use pesticide and may be applied only by certified applicators or persons under their supervision. Protective clothing must be worn during the application process. This clothing includes: a lightweight protective suit or coveralls; water-resistant hat; unlined, waterproof gloves; and unlined, lightweight boots. Mixers and loaders must

also wear goggles or a face shield, waterproof gloves, and a waterproof apron.

If you have any questions regarding this decision, contact Forest Pest Management, Region 8, USDA Forest Service, 1720 Peachtree Road, NW, Atlanta, Ga. 30367 (404/881-7934).

That soft southern drawl that sometimes answers the IPM phone these days belongs to Selma Williams, who is helping staff secretary Julie Wilson get out the typing/word processing workload of the Program. "We're very fortunate to have Selma on our team," says Program Manager Bob Thatcher.

IPM Movie Available for Loan

The film "Forest in the Balance—A Fight Against Time" is available for loan. This 28-minute color presentation discusses vegetation management in the South, spruce budworm in Maine, and the mountain pine beetle in Montana. If you would like to borrow the film, write to the IPM Program, USDA Forest Service, 2500 Shreveport Highway, Pineville, La. 71360.

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Other Publications

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Applefield, Milton. Manufacture and marketing of paneling from beetle-killed pine. *Southern Lumberman*. 244(3038): 7; 1983.

Hertel, G. D.; Wallace, H. N. Effect of cut-and-leave and cut-and-top control treatments on within-tree southern pine beetle populations. *Res. Note SO-299*. New Orleans, LA: U.S. Department of Agriculture, Forest Service, Southern Forest Experiment Station; 1983. 4 p.

Turnbow, R. H., Jr.; Hu, L. C.; Rykiel, E. J.; Coulson, R. N.; Loh, D. Procedural guide for FERRET, the question analysis routine of the decision support system for southern pine beetle management. *Misc. Publ. 1533*. College Station, TX: Texas A. & M. University, Texas Agricultural Experiment Station; 1983. 21 p.

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